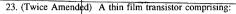
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Duty/



[a] an intrinsic channel semiconductor layer:

- a gate insulating layer contacting said channel layer; and
- a gate electrode adjacent to said channel layer with said gate insulating layer therebelies,

wherein said channel semiconductor layer comprises a non-single crystalline silicon semiconductor layer containing oxygen, nitrogen or carbon at a concentration  $5 \times 10^{19}$  atoms/cm³ or less and said semiconductor layer shows a Raman [peak]  $\frac{\text{shift}}{\text{shift}}$  at a wavenumber of 512 cm¹ or higher.



## 25. (Twice Amended) A thin film transistor comprising:

- [a] an intrinsic channel semiconductor layer:
- a gate insulating layer contacting said channel layer; and
- a gate electrode adjacent to said channel layer with said gate insulating layer therebetween,

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wherein said channel semiconductor layer comprises a non-single crystalline silicon semiconductor layer containing oxygen, nitrogen or carbon at a concentration  $5 \times 10^{11}$  atoms/cm<sup>3</sup> or less and a ratio of a full band width at half maximum (FWHM) of a Raman peak of said channel semiconductor layer to a FWHM of a Raman peak of a single crystalline silicon is less than 3.



## 27. (Twice Amended) A thin film transistor comprising:

- [a] an intrinsic channel semiconductor layer:
- a gate insulating layer contacting said channel layer; and
- a gate electrode adjacent to said channel layer with said gate

insulating layer therebetween,

where in said channel semiconductor layer comprises a non-single crystalline silicon semiconductor layer containing oxygen, nitrogen or carbon at a concentration  $5 \frac{1}{2}$   $10^{19}$  atoms/cm<sup>3</sup> or less and a peak intensity ratio Ia/Ic of said channel semiconductor layer is less than 0.4 [(]where Ia represents a Raman peak intensity at a wavenumber of 480cm-1 for an amorphous component of said channel semiconductor layer and Ic represents a Raman peak intensity at 521 [cm<sup>-1</sup>] cm<sup>-1</sup> for a single crystalline silicon.

32. (Amended) A thin film transistor [comprising an activation layer] produced by a process comprising the steps of:

forming on a surface an intrinsic or substantially intrinsic silicon semiconductor film containing therein carbon, nitrogen or oxygen at a concentration of  $5 \times 10^{19}$  [atoms/cm<sup>3</sup>] atoms/cm<sup>3</sup> or less; and

irradiating said entire semiconductor film with a laser beam or a light having a strength equivalent to the laser beam with melting the semiconductor to increase the degree of crystallinity thereof.

33. (Amended) A thin film transistor comprising:

[a] an intrinsic channel semiconductor layer;

a gate insulating layer contacting said channel layer; and

a gate electrode adjacent to said channel layer with said gate insulating layer therebetween.

wherein said channel semiconductor layer comprises a non-single crystalline silicon semiconductor layer containing oxygen at a concentration 1x10<sup>19</sup> atoms/cm<sup>3</sup> or less and said semiconductor layer shows a Raman shift





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at a wavenumber of 512 cm<sup>-1</sup> or higher.

## 34. (Amended) A thin film transistor comprising:

- [a] an intrinsic channel semiconductor layer;
- a gate insulating layer contacting said channel layer; and
- a gate electrode adjacent to said channel layer with said gate insulating layer therebetween,

wherein said channel semiconductor layer comprises a non-single crystalline silicon semiconductor layer containing oxygen at a concentration 1x1019 atoms/cm3 or less and a ratio of a full band width at half maximum (FWHM) of a Raman peak of said channel semiconductor layer to a FWHM of a Raman peak of a single crystalline silicon is less than 3.

## 35. (Amended) A thin film transistor comprising:

- [a] an intrinsic channel semiconductor layer;
- a gate insulating layer contacting said channel layer; and
- a gate electrode adjacent to said channel layer with said gate insulating layer therebetween.

wherein said channel semiconductor layer comprises a non-single crystalline silicon semiconductor layer containing oxygen at a concentration 1x1019 atoms/cm3 or less and a peak intensity ratio Ia/Ic of said channel semiconductor layer is less than 0.4 where Ia represents a Raman peak intensity at a wavenumber of 480 cm<sup>-1</sup> for an amorphous component of said channel semiconductor layer and he represents a Raman peak intensity at 521 cm-1 for a single crystalline silicon.